Credit and Capital Markets, Volume 51, Issue 4, pp. 621–644
Scientific Papers

The Swiss Sovereign Money Initiative

Katrin Assenmacher and Claus Brand*

Abstract

On 10 June 2018, Switzerland voted against a constitutional amendment to introduce a system of sovereign money or Vollgeld. The proposal foresaw that all money be created by the central bank and that commercial banks be banned from creating demand deposits. Demand deposits would have been required to be held in off-balance sheet accounts at commercial banks. We discuss the specific features of this proposal and compare them to its historical predecessor, the Chicago plan. We argue that the Swiss initiative would not have tangibly enhanced financial, monetary, and economic stability. Specifically, if implemented earlier, it would not have addressed the root causes of the Global Financial Crisis and would have been ineffective in changing its course and its consequences for Switzerland. Though the Vollgeld proposal would have turned commercial bank into central bank money, close-money substitutes would likely have remained on the liability side of commercial bank balance sheets. Vollgeld would also unlikely have redeemed promises of ancillary effects such as a reduction in public debt, more sustainable economic growth, and less complex regulation. Forestalling and tackling financial imbalances requires limiting leverage and safeguarding liquidity buffers through bank-level and system-wide rules and regulation.

Die Vollgeldinitiative in der Schweiz

Zusammenfassung

Am 10. Juni 2018 lehnten drei Viertel der Schweizer Stimmberechtigten eine Verfassungsänderung ab, die ein Vollgeldsystem in der Schweiz eingeführt hätte. Der Vorschlag hätte der Notenbank das alleinige Recht zur Geldschöpfung gegeben und den Geschäftsbanken die Schaffung von Sichteinlagen verboten. Zahlungsverkehrskonten hätten von den Geschäftsbanken ausserhalb ihrer Bilanz geführt werden müssen. Wir diskutieren

* Dr. Katrin Assenmacher, European Central Bank, Sonnemannstraße 20, 60314 Frankfurt am Main, E-Mail Katrin.Assenmacher@ecb.europa.eu.

Dr. Claus Brand, European Central Bank, Sonnemannstraße 20, 60314 Frankfurt am Main, E-Mail Claus.Brand@ecb.europa.eu.

We thank Romain Baeriswyl, Andreas Fischer, Petra Gerlach, Malte Krüger, Carlos Lenz, Mathias Zurlinden and an anonymous referee for helpful comments and support. The views expressed in this paper are those of the authors and do not necessarily represent those of the European Central Bank.

die Einzelheiten des Vorschlags und vergleichen sie mit dessen Vorgänger aus den 1930er Jahren, dem Chicago Plan. Wir argumentieren, dass sich die monetäre und wirtschaftliche Stabilität sowie die Finanzstabilität in der Schweiz durch die Annahme der Initiative nicht wesentlich verbessert hätten. Ein bestehendes Vollgeldsystem hätte nicht bei den Ursachen der Finanzkrise angesetzt und wäre unerheblich für ihren Verlauf und ihre Folgen für die Schweiz gewesen. Obwohl mit Vollgeld Sichteinlagen bei Geschäftsbanken in Zentralbankgeld umgewandelt worden wären, hätten geldnahe Einlagen auf der Passivseite der Bilanz weiter existiert. Vollgeld hätte auch Versprechen wie eine Senkung der Staatsverschuldung, ein nachhaltigeres Wachstum und eine weniger komplexe Bankenregulierung nicht erfüllt. Die Verhinderung und Bewältigung von finanziellen Ungleichgewichten erfordert eine Regulierung sowohl auf Bankenebene als auch für das Finanzsystem insgesamt, um die gesamtwirtschaftliche Verschuldung zu beschränken und Liquiditätspuffer zu schaffen.

Keywords: Sovereign money, Chicago plan, money supply, reserves, financial stability

JEL Classification: E42, E50

I. Introduction

In advanced economies, the financial system relies on fractional reserve banking, allowing banks to create money from lending, a mechanism widely known as the money multiplier effect: The lower the percentage of deposits required to be held as reserves, the higher – ceteris paribus – the ability of the banking system to create commercial bank money. Yet, uneasiness about money creation by commercial banks has always persisted and, in this decade, has been accentuated in debates seeking to understand and overcome the Global Financial Crisis. Having experienced retail and wholesale bank runs during the first phase of the crisis – something that was unheard of in two generations – the public, regulators, and policy makers alike have been reminded that commercial bank deposits, though easily accessible and as convenient to use in transactions as currency, and notwithstanding deposit insurance, are fundamentally different to central bank money. The former is inside money, i. e. a liability a private company has to redeem on demand in form of outside (central bank) money, whereas the latter is issued by the central bank itself and therefore irredeemable.

Heading off bank runs by stripping the banking sector of its ability to create money through a 100 % reserve system has been vigorously advocated by economists at Chicago University during the Great Depression of the 1930s, a proposal that has come to be known as "Chicago plan".[1] Over time, different variants of a 100 % reserve system have been proposed which can be distinguished in terms of their implication for money supply and credit provision. *Fisher* (1935) envisaged a monetary commission that buys bank assets to ensure that

[1] See *Fisher* (1935), *Lutz* (1936), *Simons* (1933) and *Douglas* et al. (1939). *Friedman* (1960) fully endorsed the plan.

deposits are always fully backed by reserves whereas banks function as intermediaries between savers and borrowers. *Benes*/*Kumhof* (2012) provide a modern interpretation of the Chicago plan within a structural macroeconomic modelling context and assume that banks issue their debt instruments exclusively to the government so that private debt disappears completely and all credit is financed either by equity or government debt.[2] In contrast, proponents of a sovereign money system (or Vollgeld, in German economic parlance) call for a complete removal of all means of payments from commercial banks' balance sheet instead of requiring a 100 % backing in order to make them legal tender and fully controllable by the central bank (see *Huber*/*Robertson* 2011).

II. The Chicago Plan

Sovereign money is not without precursors. Faced with the grave economic consequences of the Great Depression, economists were grappling to identify approaches that could restore and sustain monetary and financial stability. In large parts of the world where the gold standard had been adopted and faithfully observed even before the Great Depression secular changes in the supply of and demand for gold had caused measurable divergences from what today would be regarded as price stability. In the event of banking panics it was not universally understood how to operate the gold standard successfully so as to head off a collapse in money and credit – and deflation (see *Eichengreen* 1992). On top, the ability of commercial banks to create and destroy money was seen as a major threat to monetary, economic, and financial stability.

To regain control on the supply of money and to forestall bank runs by making commercial bank money safe, in the 1930s economists from the University of Chicago circulated a "Proposal for Monetary Reform" that advocated a 100 % reserve backing for payment deposits, a proposal that would come to be known (and eventually also endorsed by Friedman) as "Chicago plan". The aim of the plan was to make bank deposits as safe as banknotes, i. e. to strip the banking sector of its ability to create inside money; or in *Fisher*'s (1935) words "… to divorce the process of creating and destroying money from the business of banking". In addition to these promises of achieving economic, financial, and monetary stability, the implementation of the scheme would generate a significant reduction in public debt.[3]

[2] See *Kleinheyer* (2016) for a discussion of the differences between the original proposal by Fisher and the interpretation of *Benes*/*Kumhof* (2012).

[3] *Benes*/*Kumhof* (2012) assume that all investment is funded by either private equity or government debt and abstract from the existence of banknotes. In their model, the zero lower bound on interest rates is thus removed.

Under the Chicago plan banks would be required to hold 100 % of their deposits in reserves rather than holding fractional reserves. Banks would become warehouses for (narrow) money and earn profit from charging fees for storing and transferring cash (and receiving interest rates paid on central bank reserves as later on proposed in Friedman's 1960 Program for Monetary Reform). As under a 100 % reserve scheme the money multiplier would always be one, the supply of narrow money would be fully controllable in the sense that the central bank could set the interest rate that would clear the money market at the desired level of reserves.[4] In other words, a growth rule for the supply of money (currency in circulation and non-bank deposits with commercial banks) would be an obvious policy to ensure price stability. The scheme would establish nothing less than a state monopoly on the creation of narrow money. Banks would have to fund loans through equity, saving accounts, and maturing loans, rather than creating these funds themselves through the money multiplier. So the plan sought to make money supply a pure government responsibility and the intermediation of savings a commercial bank task, thereby divorcing both areas.

The proposal promised to deliver financial, economic, and monetary stability in one coherent, simple, automatic and transparent way. It purported that by eliminating financial imbalances ex ante and by turning bank deposits into fully backed liabilities, it would head off banking crises, obviating the need for crisis mitigation and resolution instruments. By stabilising the supply of money and credit it would attenuate business cycle fluctuations and support full employment.

First, as a consequence of the 100 % reserve coverage ratio, commercial bank money would always be safe, ruling out bank runs. As a consequence banks could rely on more stable funding, preventing them from generating financial imbalances as a consequence of their changing risk attitudes, thereby supporting financial stability.

Second, *Fisher* pointed out that the transition to the 100 % reserve system (and a subsequent increase in money in line with economic growth), would have the ancillary effect of a massive reduction in net government debt. Government bonds (on the asset side of commercial banks' balance sheet) would be monetised, thereby reducing debt servicing costs. And the requirement that banks would have to borrow reserves at a large scale to back their liabilities would generate a large public asset position.

[4] Proponents of sovereign money systems are concerned that the central bank would need to passively supply sufficient reserves at the demand of banks to fully back deposits in a 100 % reserve system whereas in a Vollgeld system the central bank would actively manage deposit accounts (see *Huber*/*Robertson* 2011). This reasoning neglects the role of the interest rate in clearing the money market.

Third, the plan was seen as reducing economic volatility generated by boom and bust cycles, in *Fisher's* (1935) view an inherent feature of a fractional reserve system. Since under the Chicago plan money is not created by lending operations but created through outright purchases, the money supply will not contract in a recession when the economy deleverages, avoiding a self-sustained debt-deflation spiral that *Fisher* identified as driving the economy into crisis.

The most important macro-economic impact was seen as coming from stabilising money and credit growth, intending "to eliminate … the lawless variability in our supply of circulating medium" (*Douglas* et al. 1939). To this end, the plan would have sought to curtail discretion on the part of the monetary authority to a minimum by establishing a "constant-average-per-capita supply or volume of circulating medium" and keeping the "dollar equivalent to an ideal market basket dollar […][consisting] of a representative assortment of consumer goods in the retail markets". As a matter of course, the former criterion would have ensured achieving the latter, recognising that as a consequence of technological progress, real income would rise and the price level fall. In turn, the ensuing stability in money and prices would importantly support economic stability and employment. By "splitting the two functions of lending and the creation of money supply" (*Douglas* et al. 1939), extending bank loans would be reduced to intermediating between savers and borrowers. Since credit supply was seen as relatively stable, the plan thus would avoid the build-up of credit cycles.

Yet the proclaimed impact on financial, monetary and economic stability does not naturally arise. Under the scheme, the reliance of banks on outside funding through non-monetary liabilities requires strict regulation for these liabilities not to become near-money substitutes. In the absence of such strict regulation, near-money substitutes remain subject to bank runs in response to a deterioration in the quality of bank assets. To preclude this risk, banks could be additionally required to fund all assets with public, rather than private, debt instruments, whereby the state also acquires the monopoly on the creation of bank credit. Even then strict regulation would have to rule out that also non-bank credit be funded by private debt instruments.

While the Swiss sovereign money initiative differs in terms of requiring demand deposits to be held in off-balance sheet accounts at commercial banks, rather than a 100 % reserve coverage, the economic and financial mechanism behind both variants is comparable. Keeping the design and objectives of its precursor in mind, we will now discuss the Swiss initiative in greater detail.

III. The Swiss Sovereign Money Initiative

In Switzerland, the legal process of bringing a popular initiative to vote is lengthy and can easily last four to five years. The process is unique because it enables any Swiss citizen to trigger a change in the legal framework of the Confederation eventually. As popular initiatives are confined to amendments of the Federal Constitution, the appropriate legislation to implement the initiative has to be drafted and adopted by the Federal Council later.

After the launch date of an initiative, 100'000 signatures have to be collected in a period of 18 months.[5] The initiators of the Vollgeld campaign submitted 111'763 signatures to the Federal Chancellery on 1 December 2015, which checked them and declared on 22 December 2015 that the initiative would formally come into existence, meaning that eventually a vote on the proposal would be arranged.

When an initiative has been officially approved, the Federal Council has to issue a report within a year's time which discusses the implications if the initiative were to be accepted. The report is released with a voting recommendation for the subsequent parliamentary vote in both chambers of the Swiss parliament taking place in the following 36 months. Moreover, the Federal Council has the opportunity to make a proposal for an alternative amendment to the constitution that can be voted on together with the initiative. The report on the sovereign money initiative was published on 9 November 2016 and on 15 December 2017 both chambers of the Swiss Parliament followed the Federal Council's recommendation to reject the initiative without alternative proposal, recommending a rejection to the voters as well.[6] On 10 June 2018, Swiss voters decisively rejected the initiative with a nationwide majority of 75.7 % and a rejection in every single canton.[7]

On substance the proposal intended to change Article 99 of the Swiss constitution which provides the legal foundation of the Swiss monetary system by giving the Confederation the responsibility for money and currency and the exclusive right to issue coins and banknotes. Table 1 compares the proposed constitu-

[5] For the sovereign money initiative, this period ran from 3 June 2014 to 3 December 2015, see the pre-check and official launch of the initiative at https://www.admin.ch/opc/de/federal-gazette/2014/3739.pdf. Of the submitted signatures, 110'955 turned out to be valid, i. e. they belonged to Swiss citizen and were not duplicate.

[6] See Bundeskanzlei der Schweizerischen Eidgenossenschaft (2018) for the official documentation related to the initiative.

[7] For acceptance not only a majority of all votes but also a majority of votes in a majority of cantons is required. The highest share of favourable votes was achieved in the canton of Geneva with 40.3 %. The overall voter turnout was 33.8 %. For the full results, see https://www.bk.admin.ch/ch/d/pore/va/20180610/det618.html.

Table 1

A Comparison Between the Initiative and the Current Legal Provisions

Wording of the initiative	Current constitutional text
Art. 99 Monetary policy and the regulation of financial services	***Art. 99 Monetary policy***
[1] The Confederation guarantees that the economy is supplied with money and financial services. It may deviate from the principle of economic freedom.	
[2] Only the Confederation may create legal tender in the form of coins, banknotes and book money.	[1] The Confederation is responsible for money and currency; the Confederation has the exclusive right to issue coins and banknotes.
[3] The creation and use of other means of payment are permitted provided this is compatible with the statutory mandate of the Swiss National Bank.	
[4] The law shall regulate the financial market in the overall interests of the country. In particular it shall regulate: a. the fiduciary duties of financial service providers; b. the oversight of the terms and conditions of the financial service; c. the authorisation and supervision of financial products; d. capital requirements; e. the limiting of proprietary trading.	
[5] Financial service providers shall hold transaction accounts for customers off their balance sheets. If the financial service provider goes bankrupt, these accounts do not fall into the bankruptcy estate.	
Art. 99a Swiss National Bank	
[1] *The Swiss National Bank, as an independent central bank, shall pursue a monetary policy that serves the overall interests of the country;* it manages the money supply and ensures both the functioning of the payment transaction system and the supply of credit to the economy by financial services providers.	[2] *The Swiss National Bank, as an independent central bank, shall pursue a monetary policy that serves the overall interests of the country;* it shall be administered with the cooperation and under the supervision of the Confederation.

(Continue next page)

(Table 1: Continued)

Wording of the initiative	Current constitutional text
[2] It may set a minimum holding period for investments. [3] Under its legal mandate, it shall bring newly created money into circulation free from corresponding debt, via the federal government or the cantons, or by allocating it directly to citizens. It may grant banks term loans. [4] *The Swiss National Bank shall create sufficient currency reserves from its revenues; part of these reserves shall be held in gold.* [5] *A minimum of two thirds of the net profits made by the Swiss National Bank shall be allocated to the Cantons.* [6] In the discharge of its duties, the Swiss National Bank is only bound by the law.	[3] *The Swiss National Bank shall create sufficient currency reserves from its revenues; part of these reserves shall be held in gold.* [4] *A minimum of two thirds of the net profits made by the Swiss National Bank shall be allocated to the Cantons.*
Art. 197 para. 12 Transitional provisions to Art. 99 (monetary policy and the regulation of financial services) and 99a (Swiss National Bank) [1] The implementing regulations shall stipulate that on the date when the new rules come into force, all book money in transaction accounts shall become legal tender. The corresponding liabilities of financial service providers shall become liabilities to the Swiss National Bank. This ensures that the liabilities will be settled from this book money conversion within a reasonable transition period. Existing credit agreements remain unaffected. [2] In particular, in the transition phase, the Swiss National Bank shall ensure that there is neither a shortage nor a flood of money. During this time they may grant easier access to loans to financial institutions. [3] If the appropriate federal legislation is not adopted within two years of Articles 99 and 99a coming into force, the Federal Council shall issue the necessary implementing regulations by ordinance within a year.	

Source: Dawnay (2017), italics added to highlight identical parts

tional articles with the existing one. The Vollgeld proposal would have broadly kept the current provisions and added several new ones.

Overall, the Vollgeld proposal indeed incorporated important elements of the Chicago plan, at least in its original version: The key provision is Art. 99 (5) that – by removing transaction accounts from the banks' balance sheets – enforces a separation of the money creation and lending activities of commercial banks. Bank transaction accounts are converted into central bank money to make them safe and liquid and thereby eliminate bank runs on deposits. As discussed in Section 2, the safety of deposits comes at the cost of an increased regulation of financial sector activities. In this respect, the minimum holding period for investments (Art. 99a (2)) is central. It would have had to be specified in the ensuing federal legislation and would have determined the dividing line between deposits and savings. The longer this minimum holding period would have been set, the more liabilities would have been removed from commercial banks' balance sheets. The proposed constitutional amendments, however, indicate that this might not have been enough. In a number of places additional regulatory measures were foreseen, most notably that the Confederation guarantees the supply with money and financial services and can deviate from the principle of economic freedom (Art. 99 (1)), but also in Art. 99 (4) that lists additional areas for regulation.

On top, the initiative emphasised the ancillary effect of sovereign debt relief, coming from the conversion of transaction accounts into central bank money. Banks would have had to finance the funding gap arising from removing transaction accounts from their balance sheet by a loan from the central bank which they should reimburse over the following 10–20 years (see Vollgeldinitiative 2017, p. 46). The Swiss initiative even goes one step further than the Chicago plan by envisaging that the central bank directly disburses newly created money to the federal government or the cantons, or directly to the citizens (Art. 99a (3)). Despite explicitly stating the independence of the SNB, the proposal stands in contrast to the usual recommendations of the literature on central bank independence (see *Laurens* et al. 2009 for a survey) by creating a direct link between monetary policy decisions and the government's budget.

Two important aspects are not explicitly spelled out, making it difficult to assess the economic and financial merits of the initiative in greater detail. First, unlike the endorsement of the plan by monetarists, the initiative does not explicitly require monetary policy to follow a k% money growth rule. Proponents argued that Vollgeld would allow for a better control of money and mention that the SNB would "manage the money supply" and that "in the transition phase, the SNB shall ensure that there is neither a shortage nor a flood of money", but no reference is made as to how monetary policy should be conducted. Hence, compared to existing practice, the SNB could have continued to implement monetary policy through operational interest rate targets. Second, the initiative seems

vague about whether bank loans should be covered by public debt too which would create a state monopoly on bank credit. On the one hand, the initiative distinguished between sight and savings deposits on the basis of the minimum holding period for investments in Art. 99a (2) and makes the SNB responsible for ensuring the supply of credit to the economy. On the other hand, it states no explicit requirement on how to cover savings deposits, and the explanatory texts to the initiative even entertain considerations on how to insure savings deposits.[8] These elements appear not to aim at creating a state monopoly on credit.

IV. Balance Sheet Implications of Sovereign Money and the Transition to a Sovereign Money System

The transition to a sovereign money system would have had a profound impact on the economy's financial relations because it would have affected the way credit is created and interest rates are determined beyond a first-round impact on banks' balance sheets. To illustrate the implications, we start with an exposition of the current situation by discussing the financial accounts of the SNB and the banking sector in Switzerland. Due to banks' deleveraging, particularly with regard to their foreign currency positions, and the SNB's foreign exchange interventions, balance sheet relations have changed significantly in the wake of the Global Financial Crisis. We therefore show end-of-year figures for 2017 as well as for 2007.

As the initiative aimed at providing safety for domestic payment accounts, we focus our analysis on deposits that are part of M1. Table 2 shows that in 2017 resident non-banks held CHF 550 billion sight and transactions deposits in CHF at Swiss banks.[9] Apart from their own capital, banks' funded themselves also through securities (CHF 429 billion), through borrowing from other banks (CHF 429 billion) and – to a significant extent – through deposits that are not part of M1 because they have either a longer maturity or are held by non-residents or are not denominated in Swiss francs (CHF 1278 billion). These relations illustrate very clearly that for Switzerland as an international financial centre, the banks' business is largely international. As the initiative refers to electronic legal tender it seems evident that deposits in foreign currency would remain on commercial banks' balance sheets even if they are redeemable at short notice.[10] This actually turned out to be a problem during the financial cri-

[8] See https://www.vollgeld-initiative.ch/medienmitteilungen/einzel/internationale-bankenaufsicht-geld-auf-schweizer-konten-nicht-sicher/.

[9] This figure corresponds to M1 less currency in circulation.

[10] Non-resident deposits in Swiss francs were relatively small with CHF 67 billion at the end of 2017. This figure includes all maturities, i. e. the callable deposits are even smaller.

Table 2

Balance Sheet of the Banking Sector

Assets	*2017*	*2007*	*Liabilities*	*2017*	*2007*
Reserves	470	9	Sight deposits of residents in CHF	550	232
Mortgage loans	1‘008	684	Securities	429	511
Other loans	1‘906	2‘795	Other liabilities (incl. capital and reserves)	2‘405	2‘745
Total	*3‘384*	*3‘488*	*Total*	*3‘384*	*3‘488*

Source: own calculations based on SNB data portal, monthly bank statistics, in CHF billion

sis when US dollar funding dried up, which we will discuss in the next section. Compared to 2007, the amount of residents' deposits has more than doubled, which is due to lack of attractive alternative investment opportunities in the current low interest rate environment.[11]

Since 2007 the largest change on the asset side of banks' balance sheets is visible for reserves, which increased by a factor of more than 50, driven by the foreign currency interventions that the SNB conducted to stem the appreciation of the Swiss franc. Moreover, mortgage loans increased significantly, mirroring the booming real estate market in Switzerland, whereas other assets declined, which was predominantly due to a decrease of interbank transactions in a context of high excess liquidity and increasing regulation. Overall, banks' balance sheets slightly decreased from 2007 to 2017, reflecting the deleveraging that took place particularly in the foreign currency positions after the financial crisis.

For the assessment of the sovereign money proposal the share of reserves to sight deposits is relevant: from below 4 % in 2007 this ratio increased to 85 % in 2017. On the one hand, the current share is not far from a 100 % backing of sight deposits, suggesting that an adoption of the initiative would not have had a major first-round impact on the financial sector's balance sheet relations. On the other hand, the significant shifts that took place in recent years could mean that over time balance sheets might 'normalise' in some way, making an assessment of adjustments towards a new steady state more difficult.

Table 3 shows the balance sheet of the Swiss National Bank, again with figures for the years 2017 and 2007. While in 2007 sight deposits of domestic banks were just CHF 9 billion, they stood at CHF 470 billion in 2017, far outstripping the growth in banknotes from CHF 44 billion to CHF 82 billion. The increase in

[11] While the interest rate on a two-year government bond was 2.43 % at the end of 2007, it declined to −0.77 % at the end of 2017.

Table 3

Balance Sheet of the Swiss National Bank

Assets	*2017*	*2007*	*Liabilities*	*2017*	*2007*
Foreign currency investments and gold	838	86	Banknotes in circulation	82	44
Repo transactions	0	36	Sight deposits of domestic banks	470	9
Other assets	5	5	Other liabilities	154	8
			Provisions and equity capital	137	66
Total	*843*	*127*	*Total*	*843*	*127*

Source: own calculations based on SNB data portal, in CHF billion

liquidity had its counterpart in an increase in foreign currency investments on the asset side, whereas repo transactions which were traditionally used to implement monetary policy dropped to zero on account of significant excess liquidity in the banking system.

Consistent with the principles underpinning the original Chicago plan, the sovereign money initiative intended to separate payment accounts from savings deposits at commercial banks. The idea was that payments should be effected with central bank money only, whereas savings should have continued to be handled by commercial banks.

In a first step, bank customers would have had to transfer all their transaction deposits to an off-balance sheet entity that holds them in form of central bank money.[12] Given a specification of the minimum holding period, it would be up to the account holders to decide how to split their funds into Vollgeld and savings deposits at banks. For the sake of our illustration, we assume that sight and transaction deposits of domestic residents in Swiss francs[13] that – together with currency in circulation – constitute M1 would have been converted into sovereign money and held in off-balance sheet accounts, as it is the case nowadays for securities that banks hold on behalf of their customers (*Dawnay* 2017). Like these securities appear on the balance sheet of their issuer, Vollgeld deposits held by non-banks would have appeared on the balance sheet of the SNB, i. e. CHF 550 billion of sight deposits would have been removed from the banks'

[12] The sovereign money proposal shares many similarities with central bank issued digital currency (CBDC) as it is e. g. discussed in Sweden, see *Ingves* (2017). In contrast to CBDC, however, the Vollgeld proponents seem to neglect that money is a liability of the central bank and as such should be backed by assets, see *Bacchetta* (2018).

[13] When we henceforth talk about sight deposits in the context of the sovereign money initiative, we refer to this definition.

Table 4

Balance Sheet of the Banking Sector After the Shift to Sovereign Money

Assets	*2017*	*2007*	*Liabilities*	*2017*	*2007*
Reserves	2	3	Loan from SNB	82	226
Mortgage loans	1‘008	684	Securities	429	511
Other loans	1‘906	2‘795	Other liabilities (incl. capital and reserves)	2‘405	2‘745
Total	*2‘916*	*3‘482*	*Total*	*2‘916*	*3‘482*

Source: own calculations based on SNB data portal, monthly bank statistics, in CHF billion

balance sheets in Table 2 and appeared in the SNB's balance sheet in Table 3. Banks would have kept savings and time deposits on their balance sheets and would have needed to fulfil minimum reserve requirements for them, which – according to current regulation – would have amounted to roughly CHF 2 billion (CHF 3 billion) in 2017 (2007).[14] For our scenario analysis we assume that banks would have chosen not to hold any excess reserves, as they did before the crisis. The balance sheets of the banks and the SNB immediately after the shift to a sovereign money system are shown in Tables 4 and 5.

With the loss of sight deposits, banks would have needed to secure alternative funding for their assets. In line with the provisions of the initiative, the funding gap (after balancing with banks' reserve holdings) would have been financed by a loan from the SNB.[15] Profits of the banks would have decreased if the interest rate expenses for the SNB loan had been higher than the cost of deposit funding.

It is apparent that a shift to sovereign money would have changed balance sheet relations much more profoundly in 2007, when reserve holdings of the

[14] Minimum reserve requirements are 2.5 % for deposits with a maturity of less than three months and 2.5 % of 20 % of savings deposits. The figures in the text are calculated by subtracting 2.5 % of sight deposits from the minimum reserve requirements published by the SNB.

[15] Central banks usually lend to banks only against collateral. Since the size of the loan to the banking sector is significant, it is not clear that banks would have had enough suitable collateral to pledge against such a loan. Either the SNB would have had to reduce the collateral requirements or to lend on an unsecured basis. By shifting transaction deposits to the SNB, the balance sheet of the banking sector would have shrunk whereas the SNB's balance sheet would have become larger. From a public policy perspective, a larger balance sheet means that the central bank takes over a larger part of credit intermediation in the economy, either by directing more funds to the government or by setting rules for the acceptable forms of collateral.

Table 5

Balance Sheet of the Swiss National Bank After the Shift to Sovereign Money

Assets	*2017*	*2007*	*Liabilities*	*2017*	*2007*
Foreign currency investments and gold	838	86	Banknotes in circulation	82	44
			Sovereign money	550	232
Repo transactions	0	36	Sight deposits of domestic banks	2	3
Loan to banks	82	226	Other liabilities	154	8
Other assets	5	5	Provisions and equity capital	137	66
Total	*925*	*353*	*Total*	*925*	*353*

Source: own calculations based on SNB data portal, in CHF billion

banking sector were small. With the 2017 level of excess liquidity banks would have had additional liquidity needs of CHF 82 billion compared to additional liquidity needs of CHF 226 billion in 2007, which – vice versa – would have meant that seigniorage revenues from the shift to a sovereign money system would have increased by less.

In the longer run banks are expected to repay the loan from the SNB (Vollgeldinitiative 2017, p. 46). This is a prerequisite for banks acting solely as intermediaries between borrowers and savers, without leveraging on depositors' or taxpayers' money. Table 6 illustrates this development, assuming that after ten years the SNB loan is fully repaid by cutting domestic lending. Banks could of course as well decide to reduce foreign positions, which we assume less likely as Vollgeld relates to domestic means of payment and banks might avoid currency mismatches and further changes in funding and hedging decisions. As a result, leverage in the domestic banking sector would have declined.

Table 6

Balance Sheet Adjustment of the Banking Sector Under Sovereign Money in the Longer Run

Assets	*2027*	*2017*	*Liabilities*	*2027*	*2017*
Reserves	2	3	Loan from SNB	0	0
Mortgage loans	926	458	Securities	429	511
Other loans	1'906	2'795	Other liabilities (incl. capital and reserves)	2'405	2'745
Total	*2'834*	*3'256*	*Total*	*2'834*	*3'256*

Source: own calculations based on SNB data portal, monthly bank statistics, in CHF billion

Table 7

Implications for Seigniorage from Two Monetary Scenarios

Assets	*2027(1)*	*2027(2)*	*Liabilities*	*2027(1)*	*2027(2)*
Foreign currency investments and gold	838	564	Banknotes in circulation	110	44
			Sovereign money	739	232
Disbursement to government	299	0	Sight deposits of domestic banks	2	2
			Other liabilities	154	154
Other assets	5	5	Provisions and equity capital	137	137
Total	*1142*	*569*	*Total*	*1142*	*569*

Source: own calculations, based on Tables 4 and 5, in CHF billion

After having discussed long-run adjustments in banks' balance sheets, we turn to the longer-run implications for the balance sheet of the central bank and thus the impact on government revenue. We consider two hypothetical scenarios in ten years' time: a first one in which the demand for money evolves as expected by the initiators, and a second one, in which money demand reverts to pre-crisis levels. Table 7 shows that the SNB's balance sheet would have evolved quite differently in these two scenarios. In the first scenario, M1 is expected to grow in line with nominal GDP growth, which – for the sake of this example – we assume to be 3 %. This would have increased Vollgeld deposits to CHF 739 billion and banknotes to CHF 110 billion. Banks would have redeemed their transitional loan which in combination with the increase in the money stock would have allowed the SNB to transfer roughly CHF 300 billion to the government – a value that is in the ballpark of figures cited in the discussions of the initiative (*Schöchli* 2018). With such a disbursement, the government would not only have been able to retire its entire federal debt (which amounted to CHF 93 billion in 2016), but also to cover significant part of the federal budget (CHF 67 billion in 2016).[16] However, this scenario rests on the assumption of a stable money growth rate.

The alternative assumption of the demand for M1 reverting back to its pre-crisis level would have had very different consequences. In this case, the redemption of the loan would not have been sufficient to fund the decrease in the money stock. In our example, the SNB would have had to sell part of its foreign currency investment to shrink its balance sheet.[17]

[16] See Federal Finance Administration (2018).

[17] An alternative option, which we do not show in Table 7, would have been to keep its foreign currency investments for monetary policy reasons and to issue SNB bills to

Overall, these scenario calculations illustrate that the evolution of the demand for sovereign money is key for the expected effects on public debt and government revenues. Which scenario would have been more likely to materialise? We can only speculate how depositors would have split their funds between sovereign money holdings and other remunerated investment opportunities. Payment services would have had to be financed by fees, as already envisaged by the Chicago plan. Vollgeld accounts most likely would not have yielded any return, as the SNB has never remunerated reserves, though this would not have been precluded by the initiative. In sum, the fewer funds held in Vollgeld accounts, the smaller would have been the potential revenue for the government.

A factor that makes sovereign money holdings attractive is obviously the safety of the deposits. It seems plausible that during financial turmoil this feature of sovereign money would be highly valued. Yet resulting shifts from private investments into sovereign money could make funding conditions in the financial sector more volatile and actually aggravate runs on savings deposits at commercial banks or turmoil on bond markets.

The implications for credit demand and supply would hinge on the elasticity of bank funding. Prima facie, credit demand would not change with the introduction of a Vollgeld system. By contrast, with a fixed, unitary money multiplier credit supply would instead depend on the availability of other funding sources than deposits, be it that banks manage to secure alternative funding sources or creditors tap capital markets directly. Though reliable predictions are impossible, it seems plausible to expect that leverage declines but lending rates might exhibit greater (short-term) volatility if banks' credit supply becomes less elastic. Moreover, part of lending might move from the more strictly regulated banking sector to less regulated areas of the financial system.

V. Shortcomings of the Initiative

In the following, we will assess the practical merits of the Swiss sovereign money initiative in the light of the experiences from the global financial crisis for Switzerland, also taking the US and euro area developments into account. In this context we would like to recall the causes that have prompted this crisis.

match the decrease in money demand in order to maintain price stability. To the extent that the interest rate on the SNB bills issued exceeds the return on the foreign currency investments, this would have decreased the SNB's profits. In the same vein, if selling foreign currency led to an appreciation of the Swiss franc, profits would have taken a hit too, finally eating into the SNB's equity capital.

1. How Would the Swiss Financial System Have Been Exposed to the Financial Crisis Under a Vollgeld Scheme?

Like preceding crises, as widely documented and often told, the Global Financial Crisis had its roots in maturity mismatches on commercial bank balance sheets, overstretched asset valuations, and high leverage. On the US side, leverage was driven by a housing bubble and unsustainable mortgage debt of households. Banks in Europe, including in Switzerland, were heavily exposed to these imbalances by holding portfolios of complex structured credit securities and ran into funding liquidity problems as the US real estate bubble burst. What began as an interbank freeze in US dollar liquidity conditions morphed into a retail and wholesale run on banks, ramping up counterparty credit risk, and escalating in the demise of Lehman Brothers in September 2008.

Because of their exposure to the US market, residents and non-residents withdrew their deposits from the internationally operating large Swiss banks which created funding problems both in Swiss francs and in US dollar. The situation was aggravated by the fact that with a balance sheet of about seven times Swiss GDP the large banks were perceived as too big to fail but also as "too big to rescue" by the Swiss government. In October 2008, a package was adopted to remove non-performing assets from the balance sheet of UBS – the largest Swiss bank – and to strengthen its capital base. The Swiss franc deposit outflows were mostly redirected into the domestically oriented banking sector which explains why Switzerland did not suffer a credit crunch like other advanced economies. At the same time, the collapse in global trade and investment hit the real economy, especially the tool engineering and automotive supply sector.

The ensuing unprecedented international decline in asset prices and money and credit growth, notwithstanding exceptional action on the part of monetary authorities, caused a sharp economic slowdown across advanced economies. Specifically, in the euro area, the slowdown revealed the fault-lines of European Monetary Union (EMU) architecture: it exposed high public – and in some countries private – debt and severe macro-economic imbalances and plunged the euro area into a second crisis phase, characterised by severe stress in sovereign debt markets, a grave deterioration in banks' loan portfolios, and a fragmentation in lending conditions across countries due to the sovereign-bank nexus. The seizing up of euro area credit markets caused a second recession and the loss of confidence in EMU exposed Switzerland to safe-haven flows, prompting a strong appreciation of the Swiss franc. To limit the appreciation of the franc, the SNB announced a floor of CHF 1.20 per euro in September 2011 which was kept until January 2015 and helped to stabilise the real economy.

There are two elements in this narrative that indeed beg questions or, indeed give cause to propositions, from the perspective of our discussion. Would a

Vollgeld regime not have warded off the spill-overs of the financial crisis to the Swiss financial sector altogether? Would it not have headed off at least bank runs?

If Vollgeld had been in place in Switzerland prior to the financial crisis, the domestic payment system would not have been affected by bank failures. The losses on international assets and the resulting foreign outflows, however, would likely not have been smaller in a Vollgeld system because the internationalisation of the large Swiss banks is related to other factors such as Switzerland's neutrality and its bank secrecy law.[18] Domestic savings would have been on the line to cover these losses. Though Vollgeld supposes that investors consciously accept the risks on their investments, it would have been politically very difficult to bail in domestic retail investors, especially as the losses arose from investments abroad. While Vollgeld would have reduced leverage of the domestic banking system, the domestic lending capacity of large banks being primarily affected by the international spill-overs would still have been hampered. The political assessment leading to the decision to rescue UBS thus would likely not have been much different from the one that was actually taken in October 2008.

In sum, even with sovereign money in place, the course of the crisis would not have been affected. Funding problems in the first phase of the crisis mainly arose from banks' difficulties to access US dollar liquidity. Interbank markets froze worldwide but, with only a single exception, a run on retail deposits did not happen anywhere in this first phase of the crisis because central banks stood ready to perform their lender of last resort function. Problems with the lack of foreign currency funding were new and could not be dealt with from a purely national perspective. Central banks reacted by establishing swap lines to enable banks without direct access to the Federal Reserve's balance sheet to sustain their US dollar financing. Banning commercial banks from creating money would not have prevented the dramatic maturity mismatch through wholesale funding instruments and the foreign currency funding needs, let alone the emergence of over-optimistic expectations with the build-up of private sector leverage and asset price bubbles. Moreover, a *Vollgeld* system in Switzerland obviously would not have helped to shield Swiss banks against shocks originating abroad taking into account that only a relatively small fraction of bank liabilities in Switzerland are denominated in Swiss francs and relate to domestic residents.

[18] Implicitly, as in a crisis situation this approach would have resulted in unwinding the international business of Swiss banks, it fundamentally questions the international role of the Swiss bank sector to begin with.

2. Would Vollgeld Increase Government Revenues?

Similarly to the Chicago plan, the Swiss initiative promised to greatly increase government revenues which could then be used to pay down government debt. The initiative foresaw that banknotes and reserves should be brought into circulation in the same way as it is currently the case for coins which are distributed by the central bank but reimbursed to the treasury (*Dawnay* 2017). The Chicago plan was assuming a monetisation of government debt, i. e. that the central bank would have obtained a profit by holding interest-bearing government debt on its balance sheet and issuing non-interest bearing reserves, with the profit in the end being transferred back to the government. Vollgeld in its full consequences would have implied that the equivalent of the newly issued reserves would have been transferred directly to the government, without the central bank even acquiring government securities.

Overall, the potentially large revenues that Vollgeld promised come from two effects: First, the private sector would have been forced to invest into non-remunerated reserves, allowing the government to retire interest bearing debt. This effect is related to the increase in reserves originating from the change-over to a fully reserve-backed system and is the larger the fewer reserves the private sector holds prior to the introduction of the system. It basically amounts to a redistribution of the revenue from money creation from the commercial banking sector to the government. Second, according to the Vollgeld proposal, increases in the money stock would not have been invested into interest bearing assets but directly disbursed to the government or to citizens. Through this disbursement, seigniorage revenues would be shifted intertemporally, as no interest on investments would accrue later. As our example in Section 4 illustrates, Vollgeld would indeed have generated CHF 300 billion government revenues over a period of ten years. Nevertheless, as the central bank would disburse proceeds from a growing money stock directly, it would erode the base for future seigniorage revenues. Over the period from 2007 to 2017, the SNB recorded CHF 90 billion of profits,[19] which – though less than the purported CHF 300 billion – nevertheless constitute a sizeable revenue from money creation.

3. Would Vollgeld Enhance Economic and Financial Stability?

Obviously, the higher the share of bank liabilities covered by central bank reserves, the safer are these instruments. But the flip side of this safety could be a repression of maturity transformation, accompanied by a possible deterioration of bank profitability and an inhibition in the efficient allocation of financial re-

[19] See https://www.snb.ch/en/iabout/snb/annacc/id/snb_annac_intermediate.

sources. The introduction of a Vollgeld scheme would thus likely have incentivised migrating funding and investment instruments to the shadow banking sector or contributed to higher fees for payments in commercial bank money and tighter credit conditions – or all of these.

The implications of the initiative are difficult to assess since they depend to a large extent on the length of the minimum holding period that distinguishes transactions from savings deposits and needs to be determined by lawmakers. If deposits holders convert only a small part of their funds into Vollgeld, all other short-term retail and wholesale funding instruments would lack the desired safety. In the event of a deterioration of a bank's liquidity or solvency position, saving deposits, for example, would not be as safe as Vollgeld. In the ensuing panic savers would scramble to convert savings deposits into Vollgeld deposits, thereby eroding the banks' funding side and triggering a credit crunch with severe economic consequences. Therefore, additional safeguards like regulation and deposit insurance would have been required to head off a run on savings deposits in case of a crisis.

In the Swiss case the spill-overs from the euro area sovereign debt crisis prompted a strong appreciation of the Swiss franc to which the SNB reacted by interventions in the foreign exchange market to stabilise the currency. Monetary policy in a Vollgeld system would be conducted by increasing the money supply and transferring the proceeds to the government. The exchange rate would not have been directly affected by this policy, except if the government then would have spent the proceeds on the foreign exchange market, an activity for which the treasury currently lacks the infrastructure and the expertise.[20]

With less than 14 % the federal debt to GDP ratio is very low in Switzerland, especially if compared to the central bank's balance sheet which amounted to 126 % of nominal GDP (December 2017). Given Switzerland's importance as a financial centre which is reflected in the size and volatility of the SNB's balance sheet the initiative would have introduced a link between the central bank and the government that could have proved detrimental both to fiscal and monetary stability.[21] Whenever financial shocks and exchange rate fluctuations warranted an active management of the SNB's balance sheet to safeguard price stability, the system would become a straightjacket and a source of coordination

[20] In principle, the SNB would have been able to intervene in the foreign currency market also after adoption of the initiative. This, however, would imply that the proceeds from the intervention would have to be invested into foreign currency reserves and not be available to being distributed to the government or the citizens.

[21] As the SNB's profits are large and volatile, an agreement on the profit distribution between the treasury and the SNB exists with the objective to smoothen profit disbursements in order to facilitate budget planning, see https://www.snb.ch/de/mmr/reference/Vereinbarung_Gewinn_2011/source/GAV2011_d.pdf.

failure between monetary and fiscal authorities. The proposal runs against the fundamental economic tenet that, in the pursuit of price stability, sufficient independence and the right instruments be granted to monetary authorities. The more countries have adhered to this principle, the better their track record of keep inflation low and stable (see Fischer 2015 and the numerous references therein).

4. Vollgeld Would Not Have Achieved the Promised Outcomes

From these considerations it seems clear that making transactions deposits safe is by far not sufficient to safeguard economic, financial, or monetary stability. Vollgeld would have done nothing to prevent the crisis and it would have accomplished very little in its propagation throughout the financial system, including in Switzerland. Staving off the massive build-up of maturity mismatch would have required extending a 100 % reserve coverage ratio to a wide set of interbank funding instruments and, as alternative financial instruments would have been developed to sidestep this measure, to extend reserve requirements again to these substitutes – or create complementary insurance schemes for them. That such an approach – rather than designing and implementing suitable micro- and macroprudential instruments – would have been superior to prevent maturity mismatch on bank balance sheets and the build-up of leverage is not obvious. It is therefore not surprising that the SNB joined the critical voices (see *Jordan* 2018a, b) although the initiators had stressed their intention to give more power to the central bank.

If on top of banning commercial banks from creating money there had been a commitment to a strict growth rule for a monetary aggregate fully controllable by the central bank – which the Vollgeld proposal did not envisage – the economic consequences of the crisis would likely have been much more severe. Stipulating strict quantitative targets as policy instruments was never implemented, simply because it would never work.[22] The eventual state monopoly on the creation of money (possibly even credit as well) would lead to a rigid financial system that fails to intermediate financial resources effectively across sectors, agents, and time. The rigid supply of money would render money and credit creation insufficiently elastic in response to cyclical conditions, causing large gyrations in asset prices and interest rates and, given that prices and wages are sticky, propagate instability in output and employment.

[22] The only exception to date was the non-borrowed reserves targeting procedure that the Federal Reserve System sought to implement from October 1979 to October 1982 under Chairman Paul Volcker. The episode was short-lived and the quantitative targets were complemented by an explicit corridor for the federal funds rate. For a critical appraisal, see *Bindseil* (2004), and the references therein.

Throughout most of the post-war era, including in Germany, and notwithstanding the SNB's or the Deutsche Bundesbank's monetary targeting strategies (see *Bernanke/Mihov* 1996), monetary policy was predominantly implemented through an elastic supply of high-powered money, steering interest rates in interbank money markets, thereby enabling central banks to influence broader conditions in capital and loan markets. These conditions, in turn, influence the investment and spending decisions of households and firms, and, ultimately, price developments.

There is no guarantee that a money growth rule for narrow money would be sufficient to ensure price stability. The demand for a monetary aggregate that can be controlled by the central bank, even under a Vollgeld regime, is most likely not sufficiently stable and shocks to money demand in combination with a strict money growth rule on some narrow monetary aggregate are prone to cause high volatility in interest rates and asset prices, prompting instability in economic and financial conditions.

In this respect, the Global Financial Crisis is a case in point: volatility in the demand for liquid assets was massive; if not accommodated by an elastic supply of reserves, the economic consequences would have been much more severe, as actually exemplified by the seriousness of the Great Depression which has been widely attributed to the incapability of central banks to act effectively at the time. Under these conditions it would have been impossible for the SNB to maintain price stability.

VI. Conclusion

The Swiss Vollgeld initiative originated from ideas put forward during the Great Depression, known as Chicago plan. Like under the Chicago plan, the Swiss initiative would have amounted to remove the fractional reserve system and reduce banks' tasks to the intermediation of savings and investments, but unlike it, it would not have explicitly imposed a strict growth rule on a monetary aggregate that is controllable by the central bank. We have argued that the latter variant would have greatly hampered the SNB's ability to safeguard price stability. But we also conclude that a Vollgeld regime is not sufficient to safeguard monetary, financial, and economic stability or to prevent financial bubbles.

While Vollgeld is effective in turning transactions deposits into non-defaultable central bank liabilities, other sources of short-term bank funding would have remained vulnerable to sudden withdrawals. Preventing maturity mismatch on bank balance sheets and the build-up of credit cycles requires designing and implementing micro- and macroprudential instruments in an effective way. Specifically, forestalling and tackling financial imbalances requires limiting leverage and safeguarding liquidity buffers through bank-level and system-wide rules

and regulation. While complex and controversial, this approach is more effective than replacing regulation by Vollgeld. In this respect we argue that had Switzerland implemented Vollgeld ahead of the Global Financial Crisis it would have done very little to affect the course of events.

References

Bacchetta, P. (2018): The Sovereign Money Initiative in Switzerland: An Economic Assessment, Swiss Journal of Economics and Statistics, 153(3), pp. 1–16.

Benes, J./*Kumhof,* M. (2012): The Chicago Plan Revisited, IMF Working Paper WP/12/202.

Bernanke, B./*Mihov*, I. (1996): What Does the Bundesbank Target?, NBER Working Paper, No 5764.

Bindseil, U. (2004): The Operational Target of Monetary Policy and the Rise and Fall of Reserve Position Doctrine, ECB Working Paper, No 372.

Bundeskanzlei der Schweizerischen Eidgenossenschaft (2018): "Eidgenössische Volksinitiative 'Für krisensicheres Geld: Geldschöpfung allein durch die Nationalbank! (Vollgeld-Initiative)'", https://www.bk.admin.ch/ch/d/pore/vi/vis453.html, accessed on 21.07.2018.

Dawnay, E. (2017): Sovereign Money Initiative: The Background to the National Referendum on Sovereign Money in Switzerland, available at https://www.vollgeld-initiative.ch/fa/img/English/2017_05_02_Referendum_on_Sovereign_Money_in_Switzerland.pdf.

Douglas, P. H./*Fisher*, I./*Graham*, F. D./*Hamilton*, E. J./*King*, W. I./*Whittlesey*, C. R. (1939): A Program for Monetary Reform, at available at http://faculty.chicagobooth.edu/amir.sufi/research/MonetaryReform_1939.pdf.

Eichengreen, B. (1992): Golden Fetters: The Gold Standard and the Great Depression, 1919–1939, Oxford University Press.

Federal Finance Administration (2018): Brief Report on Financial Statistics, Berne.

Fischer, S. (2015): Central Bank Independence. 2015 Herbert Stein Memorial Lecture National Economists Club, Washington, D.C.

Fisher, I. (1935): 100 % Money: Designed to Keep Checking Banks 100 % Liquid; to Prevent Inflation and Deflation; Largely to Cure or Prevent Depressions; and to Wipe out Much of the National Debt, Adelphi Company, New York.

Friedman, M. (1960): A Program for Monetary Stability. The Millar Lectures. Vol. 3. New York. Fordham University Press.

– (1992): Money Mischief: Episodes in Monetary History, Harcourt Brace & Company.

Huber, J./*Robertson*, J. (2011): Creating New Money: A Monetary Reform for the Information Ages, New Economics Foundation, London.

Ingves, S. (2017): Do We Need an E-Krona? Sveriges Riksbank, Speech given at the Swedish House of Finance, 08.12.2017.

Jordan, T. (2018a): Wie Geld durch die Zentralbank und das Bankensystem geschaffen wird, Speech given at Zürcher Volkswirtschaftliche Gesellschaft, Swiss National Bank, 16 January 2018.

– (2018b): Darum schadet Vollgeld der Schweiz, Speech given at Schweizerisches Institut für Banken und Finanzen der Universität St. Gallen, Swiss National Bank, 3 May 2018.

Kleinheyer M. (2016): The Chicago Plan Revisited: An Austrian Critique, Procesos de Mercado: Revista Europea de Economía Política, 13 (1), pp. 253–271.

Laurens, B. J./*Arnone*, M./*Segalotto*, J.-F. (2009): Central Bank Independence, Accountability, and Transparency: A Global Perspective, Palgrave Macmillan and International Monetary Fund, New York.

Lutz, F. (1936): Das Grundproblem der Geldverfassung, Ordnung der Wirtschaft, Vol. 2, Kohlhammer.

Mayer, T. (2013): A Copernican Turn for Banking Union, CEPS Policy Brief, No 290.

Schöchli, H. (2018): Die NZZ erklärt die Vollgeld-Initiative, Neue Zürcher Zeitung, 21 March 2018.

Sigurjónsson, F. (2015): Monetary Reform: A Better Monetary System for Iceland. Report Commissioned by the Icelandic Prime Minister, Reykjavik.

Simons, H. (1933): Banking and Currency Reform, Manuscript, reprinted in Samuels, W. (ed.) (1990): Research in the History of Economic Thought and Methodology, Archival Supplement, Vol. 4, JAI Press, Greenwich, CT.

Vollgeldinitiative (2017): Fragen und Antworten zur Vollgeldinitiative, 04.01.2017, 2017_01_Vollgeld_Fragen__web.pdf.